

Title:

Outreach on the Prevention and Management of Bed Bugs, *Cimex lectularius*, in Human Environments.

Project Leader:

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Abstract:

Bed bugs, *Cimex lectularius*, are blood-feeding parasites of humans and some animals. These insects, once commonplace in homes and hotels, nearly disappeared from developed countries by the 1950's due to the use of residual insecticides. In the past ten years bed bugs have made an astounding comeback in the United States and abroad, especially in multiple-family homes, but not limited to urban areas. In New York State, the NYS IPM Program is frequently called upon to help individuals, organizations and agencies deal with bed bugs in homes, facilities, and schools. Through phone calls, presentations, sample identification, development of educational materials and other outreach, the NYS IPM Program is working hard on raising public awareness about this pest and means of controlling it.

NYS IPM staff made several presentations to local health departments in the New York City metropolitan region regarding bed bugs. In response to the resurgence in bed bugs in New York City, NYS IPM submitted a grant proposal to the Northeast IPM Center in cooperation with the NYC Department of Health and Mental Hygiene to develop IPM protocols for bed bug management and prevention in NYC homeless shelters. Working with administration and staff of NYC Dept of Homeless Services (DHS) the cooperators have met with key bed bug experts and city agencies to delineate a course of action. In addition NYS IPM has been a resource for the NYC Board of Education, Director of Pest Control to help develop a response strategy for bed bugs in New York City schools, where bed bugs presumably come into the school buildings in personal items brought from home.

The NYS IPM has worked diligently on raising awareness about bed bugs and best management practices through a variety of outlets. In the near future, several educational resources will be available on the NYS IPM website, including a bed bug inspection worksheet, traveler's wallet card, and a page for frequently asked questions.

Background and justification:

Bed bugs, *Cimex lectularius*, are blood-feeding parasites of humans and some animals. Bed bugs cannot fly or jump, but they run and they are excellent at remaining undetected. These insects, once commonplace in homes and hotels, nearly disappeared from developed countries by the 1950's due to the use of residual insecticides. A steady resurgence of bed bugs became evident in the late 1990's, and since this time research and outreach from various sources have expanded yearly.

Although bed bugs are not vectors of disease, they do have significant health effects for sufferers. Bed bugs cause high levels of anxiety, stress, and loss of sleep when they infest the home. While reactions to bites vary among individuals, bites often result in itchy welts that may lead to secondary infections from scratching. Anemia has been reported for the elderly in heavy infestations. Bed bugs have also been identified as an asthma trigger. However, the overexposure to pesticides, especially from self-treatment, may be a greatly underestimated public health risk.

The hospitality industry has been hard hit by bed bugs. Early on, hotels seemed to be a major source of new infestations. Travelers were picking up bed bugs in expensive hotels as well as inexpensive motels. While this continues today, the hospitality industry is much more aware of the serious economic and public relations risks of acquiring and passing along bed bugs to customers.

Multiple unit dwellings, including apartment buildings, college dormitories, and group homes, appeared to be the most heavily infested places in 2007. Such living arrangements facilitate bed bug movement from one room to the next and among apartments. In such cases, the infestation must be handled on a building-wide scale. However, involvement of a management company or property owner is challenging and during the time it takes to raise awareness for some property operators, bed bugs continue to spread. In many cases, landlords blame their tenants and refuse to help. This deliberation gives time for bed bugs to spread to other apartments. Some property operators are proactive and supportive of their tenants and have an operating procedure worked out before the insects are present. In such cases, cooperation takes place and bed bugs can be managed within a reasonable amount of time and expense. The level of awareness of the public about bed bugs has drastically increased in the past ten years. This may be due to the generous level of media attention paid to high profile lawsuits and various human interest articles and news reports. However, experts agree that bed bugs will likely become more problematic before the trend abates. There is a continuing call for increased public awareness, promotion of best management practices and protocols, and addressing the needs of various audiences as those needs arise.

Objectives:

1. To raise awareness about bed bugs and the best approaches to prevention and management.
2. To contribute to and support research about bed bug biology and management.

Procedures, Results, and Discussion:

Bed bugs have returned as a serious pest in many countries around the world. People from all parts of the United States call the NYS IPM Program with questions about how to diagnose and eradicate bed bugs from every imaginable situation.

Although bed bugs are not widely considered to be a pest of public health, based mainly on the fact that they do not vector disease organisms, health agencies and medical practitioners are among the front lines dealing with sufferers of bed bug problems. In 2007, NYS IPM offered three workshops on Long Island for county health departments. All three were very well attended. Audiences included home health care workers, home inspectors, sanitarians, and social workers. The training covered bed bug identification, biology, inspection strategies, control methods, cleaning, and prevention. There was a special focus on avoiding bed bugs for those who enter private homes to work with people. In all, approximately 100 individuals were trained at three workshops.

Writers and educators of the NYS IPM Program are in the process of developing new resources for the IPM website that will help raise awareness of bed bug biology and management. Most prominent of those will be the “Frequently Asked Questions” page which will flow like a decision key to answer the most common questions. Additionally, new photographs of bed bug life stages and residues will be added to the IPM resources, and a wallet-sized “traveler’s card” for awareness and quick identification will be developed for those who travel and who might be at risk for picking up bed bugs along the way. The NYS IPM publication titled “Bed bugs are Back! An IPM Answer” is very popular, receiving among the highest number of hits of all NYS IPM publications in 2007. As a result of people throughout the country reading this fact sheet, many of them call with more questions. In the period between January and September over 50 individuals called NYS IPM about bed bugs. Most calls were answered personally. Furthermore, NYS IPM has coordinated a much-needed listserv for those at Cornell University who are interested in bed bug outreach, biology, and management.

In early 2007, the NYS IPM Program received a grant award from the Northeast IPM Center to fund a project titled “A Partnership for Developing Protocols for Bed Bug Management”. In collaboration with the New York City Departments of Health and Mental Hygiene (DOHMH) and Homeless Services (DHS) staff at NYS IPM organized an advisory group and a meeting with city agency workers and pest control experts to guide the project. The facilities owned and operated by DHS are currently being evaluated for bed bug presence and potential for infestation. A strategy is in place for developing and delivering outreach materials to homeless people and those who work with homeless people. Materials will include informational flyers and posters, but the major deliverable for this project will be a book of protocols that addresses major aspects of services for the homeless, including medical care, social services, living facilities, donated clothes and personal items, and advice for homeless clients to avoid acquiring bed bugs. There will also be some information about other household pests available in the protocols, because that information often overlaps with bed bug advice. As the project has evolved, it has become clear that the providers of other living arrangements need as

much or more help controlling and preventing bed bugs. Specifically, group homes for the disabled appear to be quite vulnerable, infested, and in need of protocols. The protocols developed for this project will be designed to apply to a wider array of housing arrangements. The protocols will be made freely available on the internet through the Northeast IPM Center and the NYC DOHMH. Operators of not-for-profit group homes for various at-risk populations have contacted the NYS IPM program about ways to manage bed bugs. As a result, the protocols being developed for DHS will be broad enough to be applicable in group home settings.

In January of 2007, NYS IPM had the opportunity to evaluate a child development center located in Queens, NY, for the potential for bed bug infestation. This was significant because this center is located in the heart of one of the most heavily infested parts of New York City. The Director of this center had taken the most pro-active approach, by evaluating for bed bugs before the center ever opened its doors to children. The Director requested the evaluation to put protocols in place that would prevent bed bug introduction, as well as practices to monitor for bed bugs and manage them in case they do become established.

As bed bug problems intensified in New York City, it was no surprise that they began to show up in schools. The Director of Pest Control at the NYC Department of Education recognized that bed bugs were perceived by parents and staff to be a significant problem in schools, however to date bed bugs have not been shown to be established in any school. It is presumed that bed bugs are arriving in school classrooms on the personal belongings of students and staff. The Department of Education developed protocols and outreach materials, which were reviewed by NYS IPM, and this proactive approach has been successful in reducing fear and raising parental awareness of the issue. The United Federation of Teachers requested that NYS IPM give an educational workshop for teachers and union representatives about bed bugs. The presentation covered basic biology, identification, management, and prevention geared toward teachers in a classroom setting. It was well received.

The most tangible result for research and outreach in bed bug management will be that bed bug sufferers will control bed bugs quickly and without excessive or dangerous uses of insecticides. Risks associated with bed bugs include the stress, anxiety, social isolation, financial burdens of throwing away belongings and cost of extermination. Also, there are expected to be risks from insecticide exposure, particularly when individuals attempt to manage bed bugs themselves, rather than calling a pest control specialist. The goal of the NYS IPM Program is to reduce those risks and costs, while providing best management practices. A recent article in the New York Daily News (December 30, 2007) highlights statistics of the explosion of bed bug problems in New York City. All parts of the city are affected. Research and outreach on bed bug management can help anyone, and will help many people in New York State and beyond.

Development of protocols for the NYC Department of Homeless Services will have much wider impact than on NYC's homeless population. Through the development of protocols, significant networking is happening among NYS IPM and staff from cities all

across America and in Canada. A network of knowledge is going to be necessary to raise awareness of the bed bug problem and to efficiently find and share management strategies. These types of protocols will be useful to all home and housing settings, particularly in public housing, group homes, dormitories, and multiple-family dwellings (apartments).

Project locations:

This project has been conducted throughout New York State, and field work has taken place in New York City and Ithaca, NY.

Samples of resources developed:

Photos of a female bed bug, J.L. Gangloff-Kaufmann





Jody Gangloff-Kaufmann inspecting a chair for bed bugs.